Falcon 7X

Displays

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General

Flight Deck Overview

CONTROLS

Crew has control on the displays and items contained in the displays through:

- Cursor Control via Mouse
- Two Multifunction Key Board (MKB)
- Reversion Panel which gathers all reversion controls and displays dimming knobs

INDICATIONS

Displays are the two Primary Display Unit (PDU) and Multifunction Display Unit (MDU) and the Secondary Flight Display (SFD).

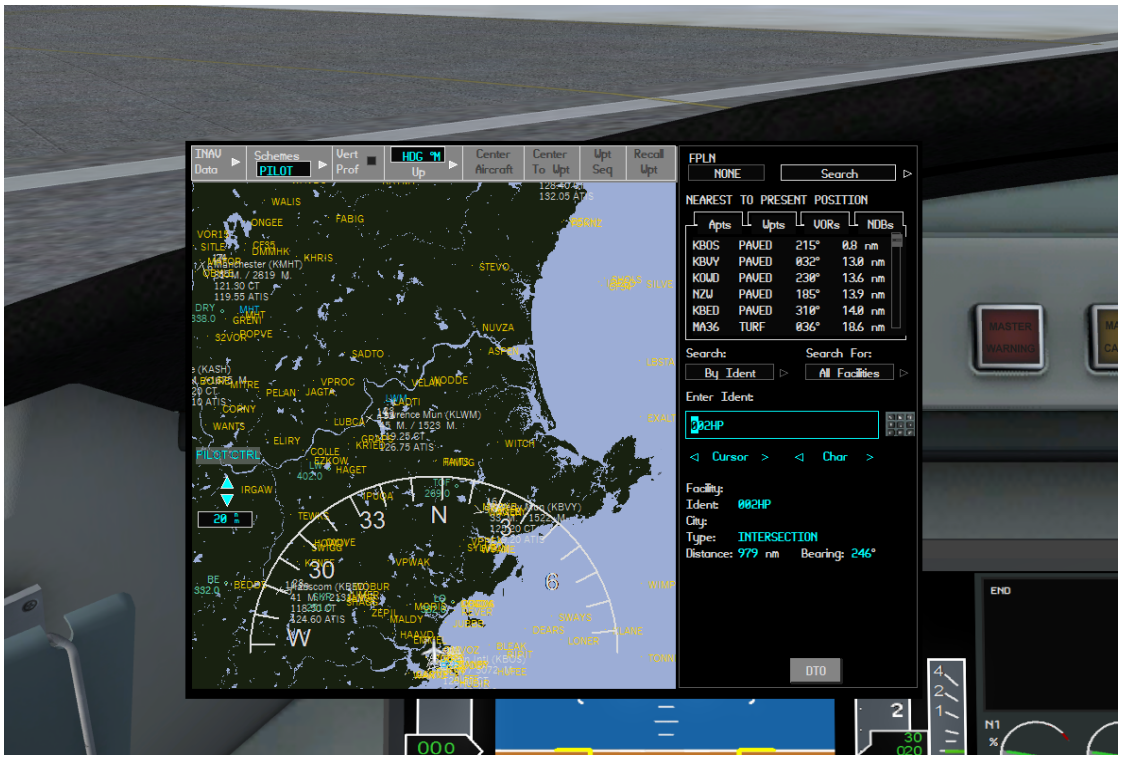
Indications related to displays are provided:

- On the ENG-CAS window for CAS messages,
- On the STATus synoptic / FAULT tab for fault messages.

POPUP WINDOWS

Each of the four displays is also available in an expanded popup display. Just click the upper left hand corner of the display.

The display will expand in the center of the screen.



You can also open any of the popup windows by the standard simulator keyboard commands:

Key Combination	Window
Shift + 2	Info Pad
Shift + 3	Pilot PDU
Shift + 4	MDU 1
Shift + 5	MDU 2
Shift + 6	Multi-Function Keyboard
Shift + 7	Copilot PDU

DISPLAY UNIT CHARACTERISTICS

The Display Units are 14.1 inch diagonal LCD Displays.

The Primary Display Units (PDU) as well as the Multi-function Display Units (MDU), are divided into 4 windows. Horizontally, these display units are split into 1/3 and 2/3 screen width. Vertically, they are split into two equal parts.

Thus, two windows have the size of 1/6 of the display area and 2 windows have the size of 1/3 of the display area: the windows are then named 1/3 windows and 1/6 windows.

Within a screen, all windows are always displaying information: either data selected by the pilots or default windows (a window cannot be blank within a screen).

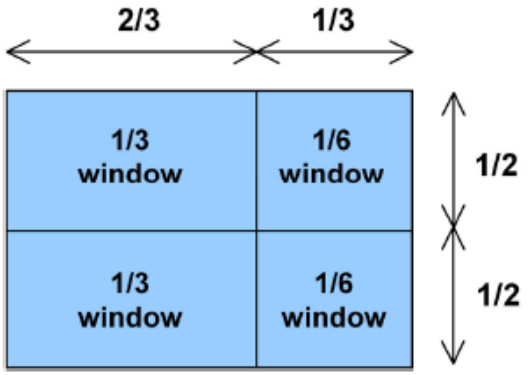


Figure 1 DISPLAY UNIT FORMAT

Even though the screen is split in those four windows, some pages of the Multi-function Display Units (MDU) can be combined in order to be displayed into a vertical 1/3 window, a 1/2 window.

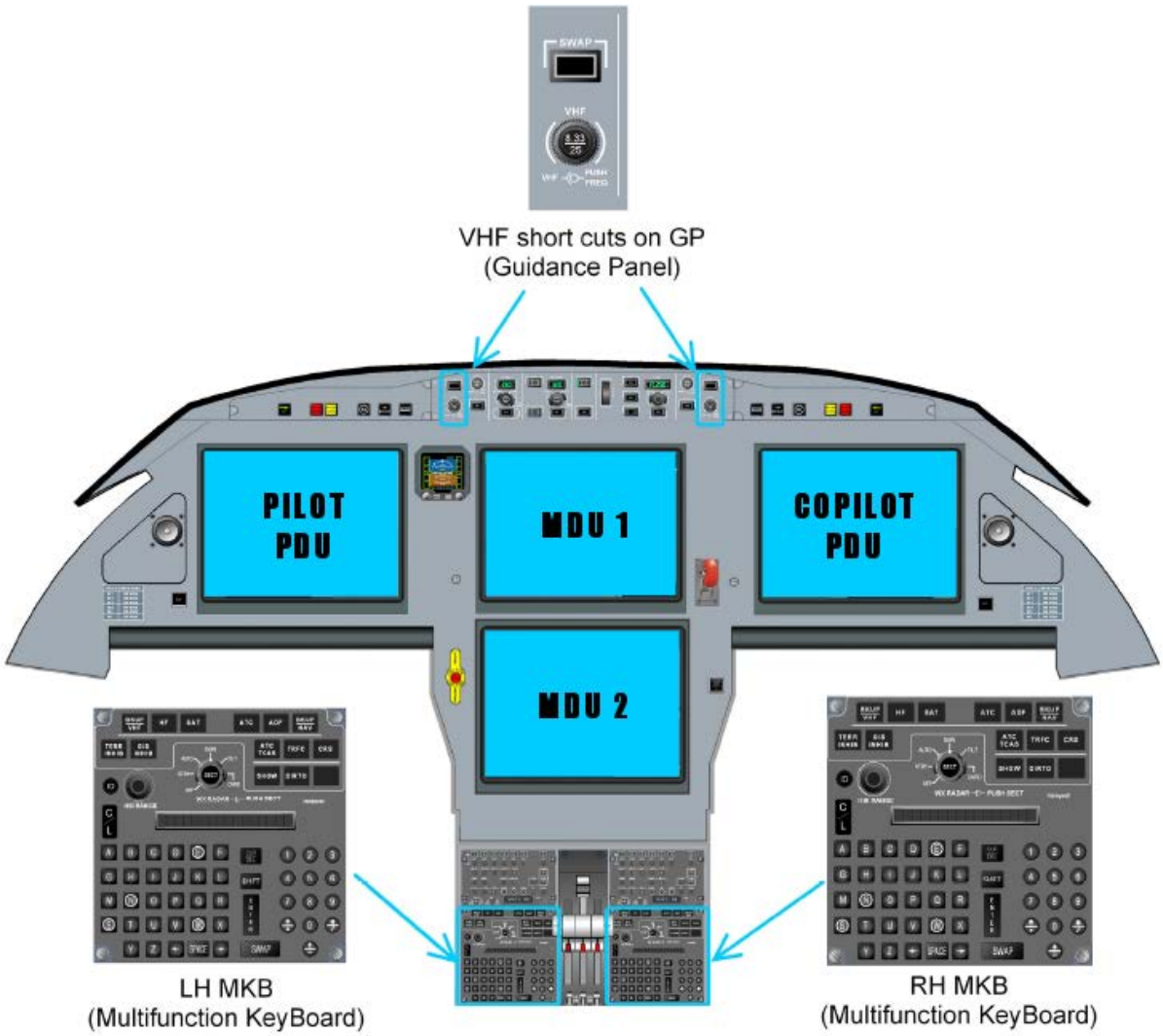


Figure 2 DISPLAY FLIGHT DECK

In case of a system failure, the screen section will be red-crossed.

Figure 3 FAILURE DISPLAY

Reversion Panel

The Reversion Panel (RP) is located in the middle of the pedestal, behind the throttles. It gathers in one place the reversion controls for avionics, for both crew members.

The RP houses:

- Four concentric dual knobs corresponding to each display:
- Two knobs for the Data Acquisition Unit (DAU) channel reversion. The DAU corresponds to generic I/O modules within the Modular Avionics Unit (MAU),
- One MDU PDU pushbutton (not used in 4 display configuration),
- 5 pushbuttons dedicated to the sensors and FMS reversions (LH and RH).

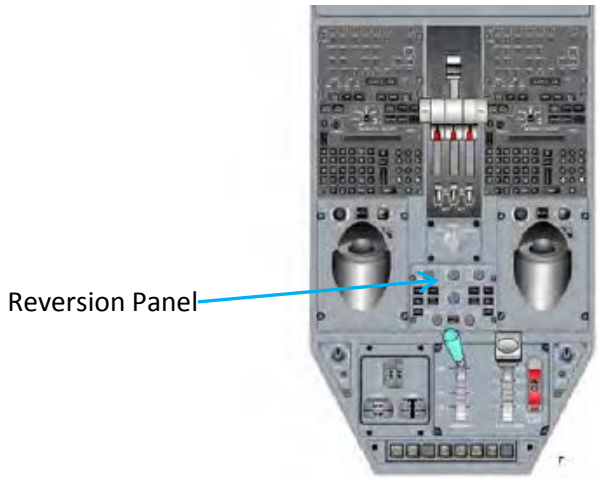


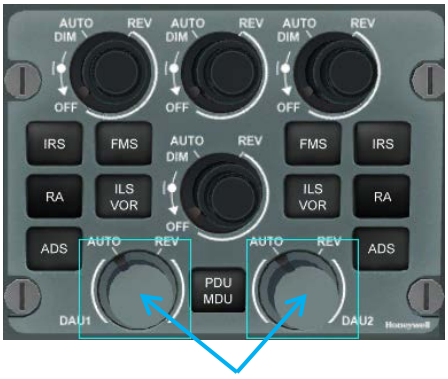
Figure 4 REVERSION PANEL

DISPLAY DIMMING

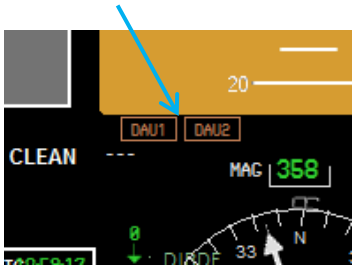
Dimmer switches

Two way switches enable dimming of the four displays.

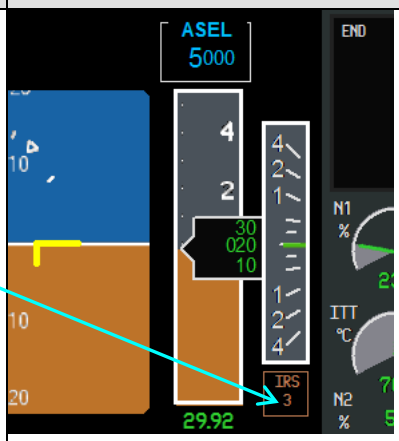
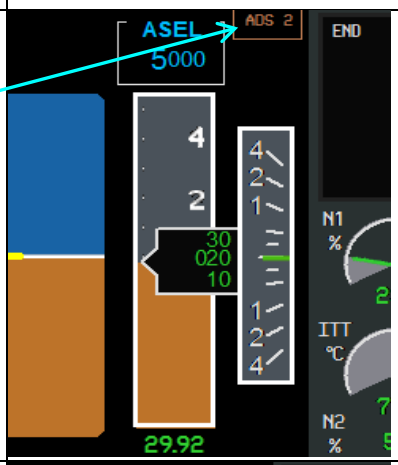
DATA ACQUISITION UNITS

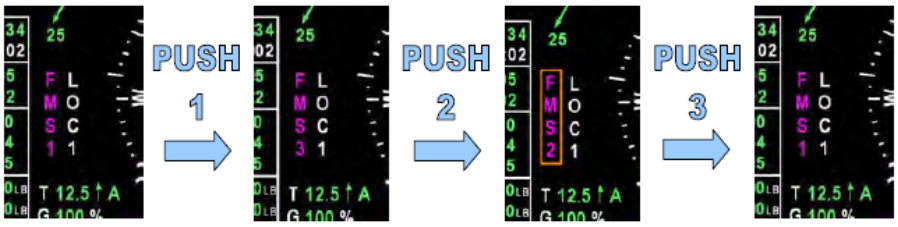


Enables secondary (backup) DAU processors in case of failure of primary source. Indication that backup processors are in use annunciated on the PDU.



FMS REVERSIONS

CONTROL	FUNCTION	LOCAL INDICATION
IRS	Allows selection of Inertial Reference System (IRS) sources for display on the PDU, with the following cycle when the reversion switch is pressed: On the LH side: IRS 1 initially, IRS 3, IRS 2. On the RH side: IRS 2 initially, IRS 3, IRS 1.	
ADS	Enables the other Air Data System (ADS) source to be used for display of air data on the PDU, with the following cycle when the reversion switch is pressed: - On the LH side: ADS 1 initially, ADS3, ADS2 - On the RH side: ADS2 initially, ADS3, ADS1.	
RA	Allows selection of the Radar Altimeter (RA) source for display on the PDU, with the following cycle when the reversion switch is pressed: - On the LH side: RA 1 initially, RA 2. - On the RH side: RA 2 initially, RA1.	

FMS	FMS processor selection. Reversion pushbutton operating sequence: - 1, 3 and 2 

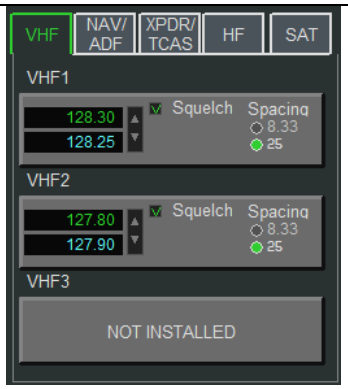
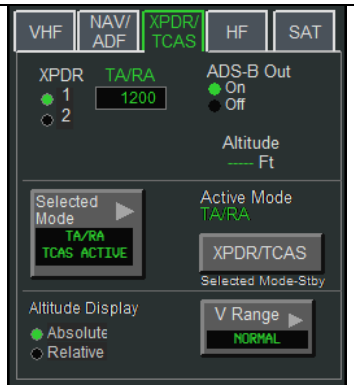
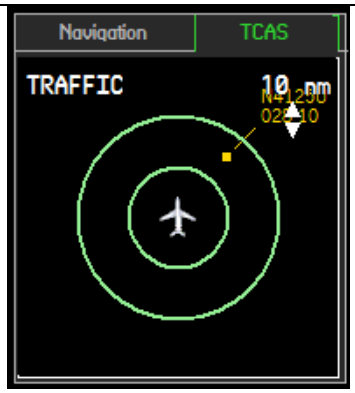
CONTROL	FUNCTION	LOCAL INDICATION
ILS VOR	When an ILS reversion is performed, the source symbol is framed in amber while the color corresponding to the target status remains white, cyan or magenta.	
	For a VOR, the source is still the LOC but the identification is notified as VOR. When a reversion is done, the LOC source caption and the VOR identification caption are boxed in amber. The source remains colored according to the target status.	

MKB - Multi Function Keyboard

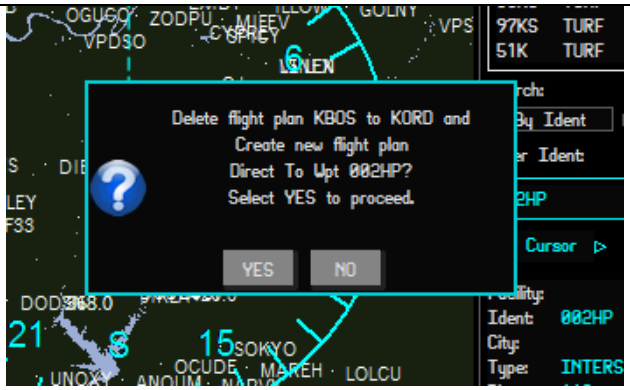
The Multi-Function Keyboard provides alphanumeric keyboard and dedicated controls for flight management, as well as functions shortcuts.

Figure 5 MULTI FUNCTION KEYBOARD

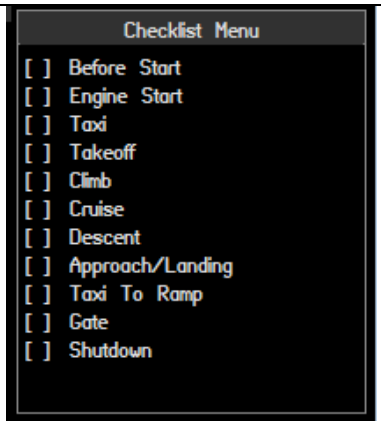
CONTROL	FUNCTION	LOCATION
ADF	Pops up the ADF menu on the 1/6 window of the PDU	

ATC	Pops up the ATC menu in the 1/6 window of the PDU	
ATC TCAS	Pops up TCAS menu on the PDU 1/6 window.	
TRFC	Pops up Traffic Display on the PDU 1/6 window.	
BKUP NAV	At any time, pressing the BKUP / NAV shortcut on the MKB positions the CCD cursor on the on-side Permanent Radio Bar (on NAV1 on the LHDU and on NAV2 on the RHDU).	

CRS	Used to display the VOR / LOC CDI on the on-side PDU	
SHOW	Displays the information page on the next waypoint in the flight plan	

DIRTO	Shortcut key to initiate a Direct To/Divert To flight plan for a waypoint that has been selected, or found in the search engine. A dialog box will appear on MDU 1 asking you to confirm deletion of the present flight plan if one is loaded (Divert To). Select YES to create the new flight plan.	

CONTROL	FUNCTION	DISPLAY
G/S INHIB	Inhibits "GLIDE SLOPE" aural warning.	G/S INHIB white text is displayed in the right lower part of the HSI window
		TAWS: G/S CANCEL Advisory CAS message
TERR INHIB	Deactivates the Terrain Clearance Floor and Terrain and Obstacles Alerts enhanced modes to avoid unwanted alerts.	TERR INHIB white text is displayed in the right lower part of the HSI window
		TAWS: TERR INHIBIT Advisory CAS message

C/L	Pops up the CHECKLIST window on MDU 2 if not yet displayed.	

PDU - Primary Display Unit

General

The PDU is fitted in front of each pilot station (LH Display Unit and RH Display Unit) in a normal display units configuration.

Each PDU contains:

- An Attitude Director Indicator (ADI),
- An Horizontal Situation Indicator (HSI),
- An ENG-CAS page, comprising permanent engine parameters information and the CAS messages display area,
- A 1/6 window, which can be filled at will.

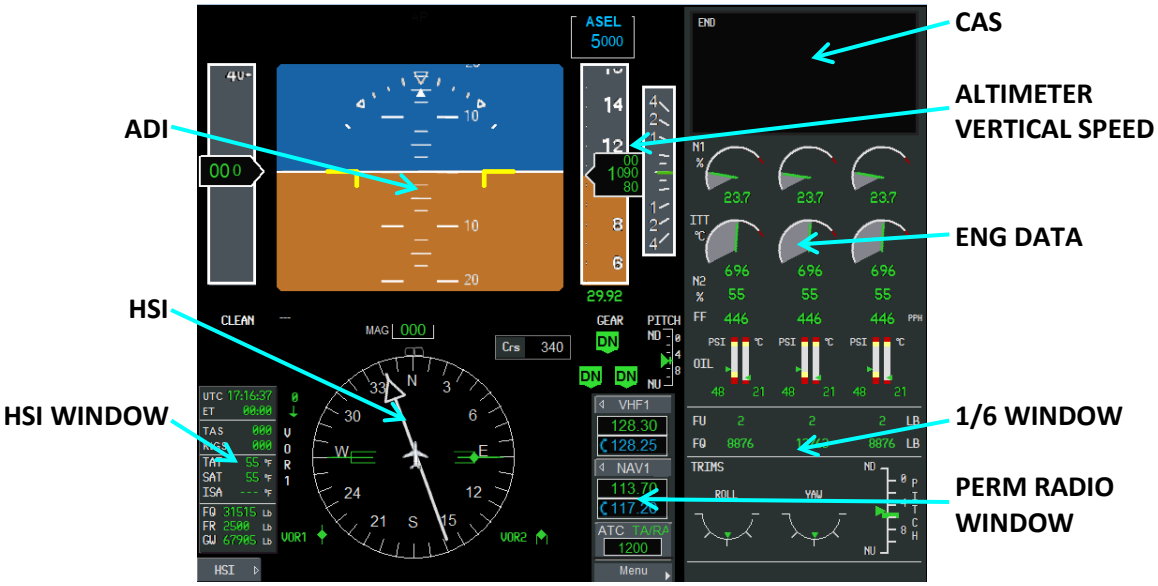


Figure 6 PILOT PRIMARY DISPLAY UNIT

The ADI, the HSI and the ENG-CAS window are fixed and cannot be changed to another window. On the other hand, the 1/6 window can be modulated depending on the number of display units available.

Primary Display Unit Content

The Primary Display Unit (PDU) provides all the basic flight information necessary to aviate, navigate in short term, communicate and supervise airplane status.

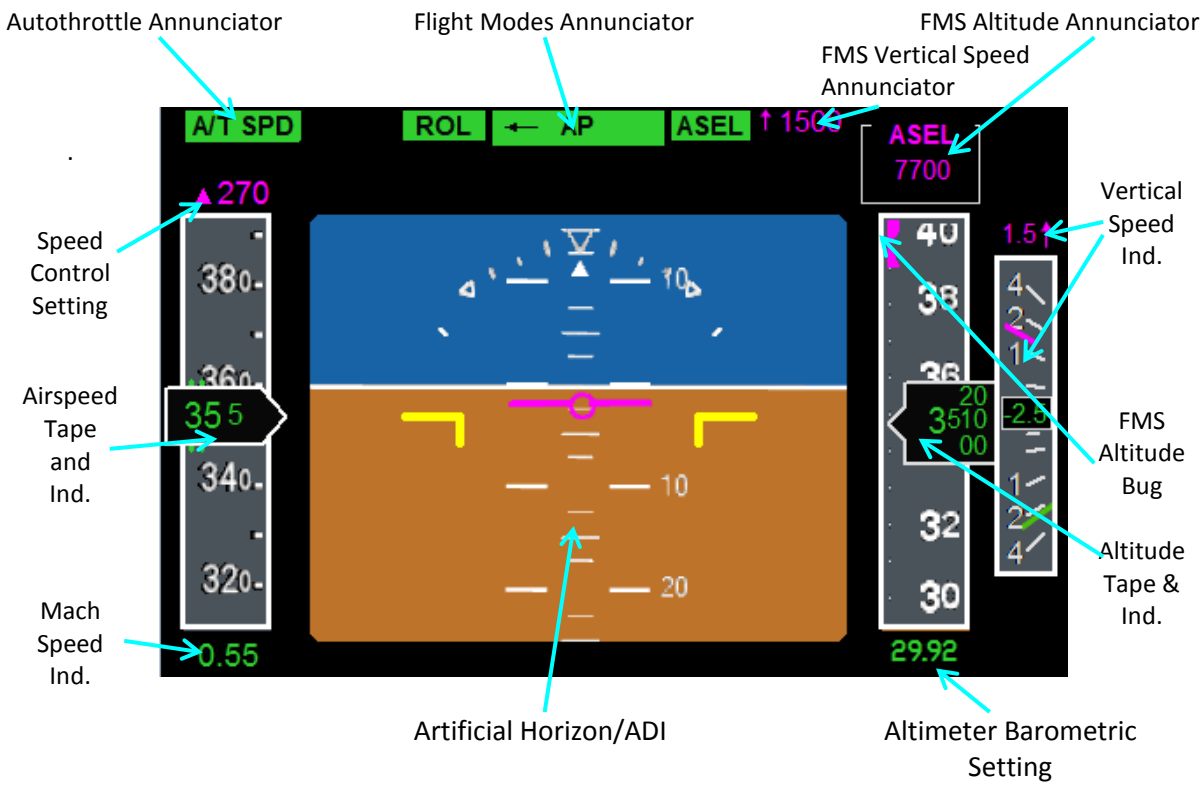


Figure 7 ADI WINDOW

The ADI Window is comprised of:

- An artificial horizon, which provides a reference for path, pitch and roll as well as other information about the airplane attitude,
- A speed tape, graduated in knots,
- Mach speed indicator,
- An altitude tape, graduated in feet,
- A vertical speed tape, graduated in thousand feet per minute,
- Altimeter barometric setting,
- A Flight Mode Annunciator (FMA) area, providing information on Automatic Flight Control System (AFCS).

ALTIMETER BAROMETRIC SETTING

The altimeter barometric setting knobs are on both the pilot side and copilot side of the Guidance Panel (Autopilot). Clicking left or right on the knob will increase/decrease the setting. The scroll wheel will do the same. Pressing down on the scroll wheel (mouse center click) automatically resets the setting to standard (29.92 Hg or 1013 Mb).

FLIGHT DIRECTOR / THRUST DIRECTOR DISPLAY

When a flight plan is loaded, and the Autothrottle setting is made, the Flight Director and Thrust Director are available for use on the ADI.

Acceleration Chevron

The *Acceleration Chevron* (AC) is the green V-shape symbol displayed in the ADI.

When used in relation with the *Flight Path Symbol* (FPS), it gives an immediate and intuitive indication about the airplane ability to stabilize and maintain speed, accelerate or decelerate.
When used in relation with the FPS scale in the ADI, and for smooth maneuvers, it gives an immediate and intuitive indication about the maximum flight path angle that can be instantaneously flown at steady speed, which is valuable information for a pilot in an engine failure situation for instance.

Trend Vector

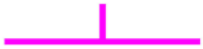
The Trend Vector (TV) is a green double-line bar which is displayed above (when the airplane is accelerating) or below (when the airplane is decelerating) the speed pointer

in the ADI. On Falcon fitted with EASy, this green double-line bar can be topped by a horizontal line when the acceleration is above the scale limit ( ).

Thrust Director

The *Thrust Director* (TD) is the magenta open box displayed in the ADI. In order to fly the speed selected on the Guidance Panel and displayed on the speed scale (speed bug in magenta), the AC must be set in the TD box.

Rotation Symbol



The *Rotation Symbol* (ROS) is the magenta inverted-T symbol is displayed in the ADI during take-off, from brakes release to 3 seconds after lift-off.

Displayed at the bottom of the ADI at brakes release, it reaches the horizon at the end of the rotation. It provides the pilot with an easy-to-follow vertical means to best control the rotation phase of the airplane.

That is the reason why the ROS was created to provide the pilot with a valid, easy-to-use pitch reference to control the two parts of the rotation phase. In bringing up the ROS from the bottom of the ADI onto the horizon, the pilot actually follows the optimum rate of rotation. Moreover, initially displayed at the bottom of the ADI, the ROS moves upward as the FPS will do when "pushed by the ROS" once the airplane is airborne. This results in a smooth, linear eye pattern from the bottom to the top of the ADI, significantly decreasing the pilot workload.

At rotation speed, the pilot pulls the stick back, making the ROS rise from the bottom of the ADI. Then the pilot controls the rotation by flying the ROS onto the horizon in the ADI. In this way, the pilot flies the optimum rate of rotation to reach the optimum speed and AOA at take-off.

As soon as the airplane is airborne, the FPS rises from the horizon, where it was stuck during the take-off roll and rotation. Three seconds after lift-off, the ROS disappears and FPS naturally becomes the primary means of flight path control.

Flight Director

The *Flight Path Symbol* (FPS) and the Pitch Symbol provide the pilot with both flight path and pitch angle indications.

Flight Path Symbol

Pitch Symbol

It is advisable not to use the FPS during the rotation phase because:

- During the first part of the rotation phase, the FPS remains on the horizon whereas a guidance is necessary to set the appropriate take-off attitude,
- During the second part of the rotation phase, the FPS position permanently changes with the speed.

In addition, flying simultaneously FPS and Pitch Symbol was perceived as possible but not comfortable for the pilot. This would imply non-intuitive and repeated eye pattern in the ADI between the horizon (where the FPS is displayed) and the top (where the Pitch Symbol is ultimately displayed) and this during a flight phase with a heavy workload.

The Flight Path Symbol can be removed, and exchanged for the Thrust Director using the FS/TD button on the *Guidance Panel*.

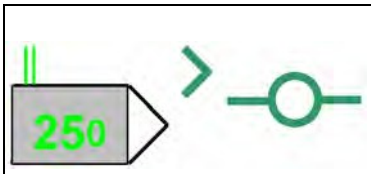
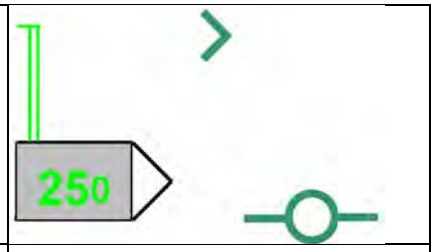
The relative positions of the AC and the FPS provide the pilot with an immediate, direct and intuitive means to assess and precisely control the acceleration along any given flight path, whatever is the instantaneous airplane trajectory (straight level flight, descent, climb):

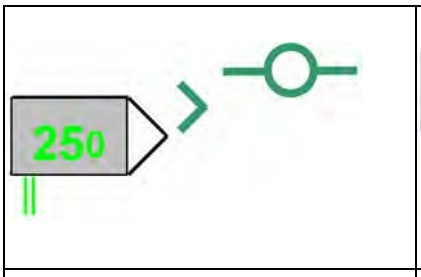
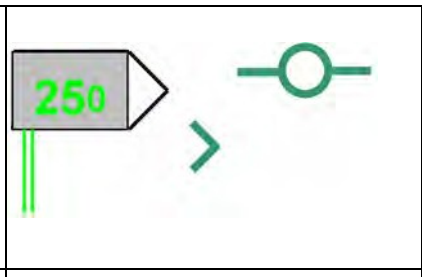
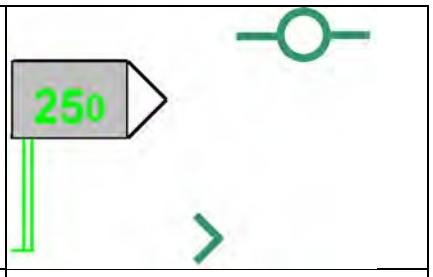
When the AC is above the FPS, the airplane is accelerating	
When the AC is below the FPS, the airplane is decelerating	
When the AC is aligned with the FPS, the airplane is maintaining speed.	

The pilot will control the AC, thus the speed, in moving the thrust levers. The AC position can also vary upon landing gear, airbrakes or slats / flaps activation, due to the consequent variation in drag.

The airplane acceleration or deceleration along the flight path can be cross-checked through the TV position with respect to the speed pointer.

Additionally, the length of the TV, as well as the distance between the AC and the FPS, are proportional to the acceleration (when AC is above FPS) or deceleration (when AC is below FPS):

		
Low acceleration	Medium acceleration without exceeding scale limit	High acceleration exceeding scale limit

		
Low deceleration	Medium deceleration without exceeding scale limit	High deceleration exceeding scale limit

Horizontal Situation Indicator

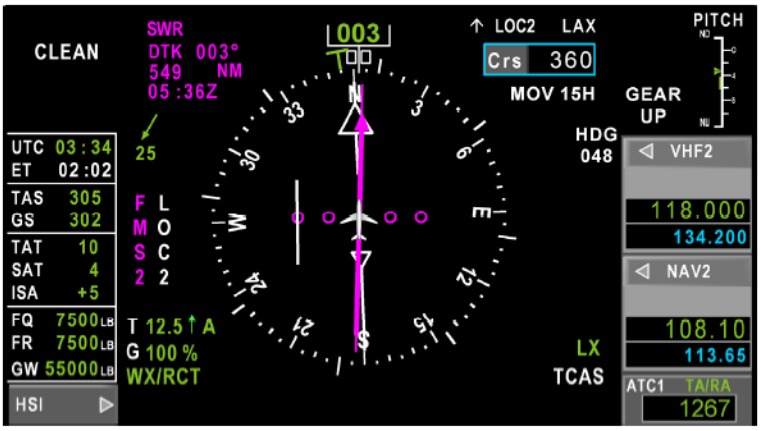


Figure 8 HSI WINDOW

The Horizontal Situation Indicator is comprised of:

- Flaps and airbrakes indicator
- FMS NAV summary,
- VOR / LOC NAV summary,
- Gear and horizontal stabilizer trim indicators,
- HDG / TRK bug readout,
- Permanent Radio Bar (PRB),
- HSI Window,
- Sensors status,
- HSI features menu,
- NAV sources,
- Navigation data bar,
- Wind direction indicator.

HSI WINDOW

HSI Window

The following air data information is provided on the HSI of the PDU:

- Universal (Zulu) Time
- Elapsed Timer
- True Air Speed (TAS),
- Ground Speed
- Total and Static Air Temperature (TAT, SAT),
- Deviation from ISA standard atmosphere temperature.
- Total fuel quantity in Lbs.
- Total fuel reserve, in Lbs.

Elapsed Timer

Use the Elapsed Timer Button to start and reset the elapsed timer.

Elapsed Timer Button

FLAPS AND AIRBRAKES INDICATOR

The flaps and airbrake (spoilers) controls are located on the lower pedestal.

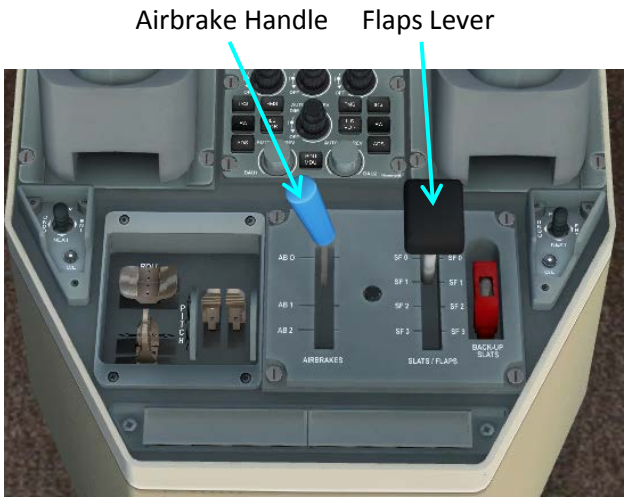
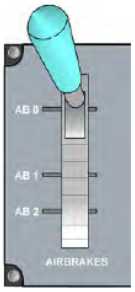
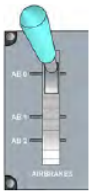
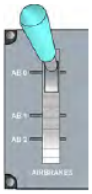
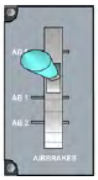
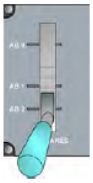
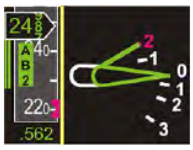
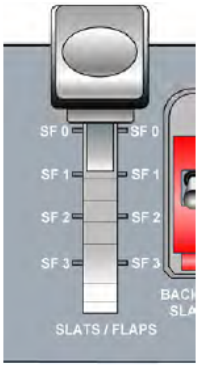
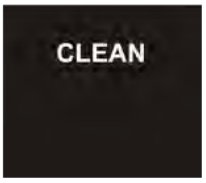


Figure 9 - Flaps-Airbrake Unit

CONTROL	FUNCTION	TO ACTIVATE / TO DEACTIVATE	SYNOPTIC
	Airbrakes to AB 0 notch: - Airbrake panels, slats and flaps retracted		CLEAN
	Airbrakes to AB 0 notch: - AB and/or spoiler (acting as airbrakes) when automatically commanded		 AUTO EXTENSION
	Between AB 0 and AB 1: - Progressive spoiler deployment (maximum deflection at AB1 depends on airspeed and angle of attack)		
	Set airbrakes to AB 2: - Inboard and outboard airbrake panels deployed		 AUTO RETRACTION

CONTROL	FUNCTION	TO ACTIVATE / TO DEACTIVATE	SYNOPTIC
	Disarms automatic airbrake extension	AUTO EXT mode is on	No specific indication
		AUTO EXT mode is OFF	

When A/B AUTO EXT. is selected OFF in flight, the CAS message A/B AUTO-EXT OFF is displayed.

CONTROL	FUNCTION	TO ACTIVATE / TO DEACTIVATE	SYNOPTIC
	Sets Slats / Flaps to SF0 notch. (Slats + Flaps retracted)		
	Sets Slats / Flaps to first notch SF1. (Slats + Flaps 9°)		
	Extends the Middle and Outboard slats in backup mode.		

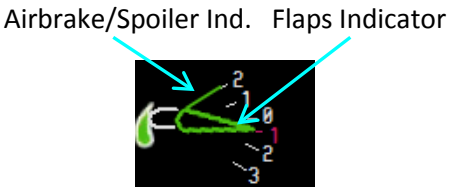
Flaps indications are displayed:
- On the PDU for the slat flap position indicator,
- On the FCS synoptic page (Slat surfaces positions),
- On the placard markings for slats flaps limitations,
- In the ENG-CAS window for CAS messages,
- In the STATus synoptic / FAULT tab for fault messages.

PDU Indication

Flap and airbrake positions are displayed in the top left corner of the HSI window.

Flap / airbrake symbols are displayed as long as:
- There is one slat, one flap or one airbrake panel extended (including untimely or un-commanded surface movement), or
- One of the secondary flight controls is in automatic control (AUTO, A/B AUTO RET, A/B DISARM),

The Flap / airbrake symbols are replaced by a white CLEAN label if the airplane is in CLEAN configuration, and the aircraft is below 18,000 ft. altitude.



FCS Synoptic

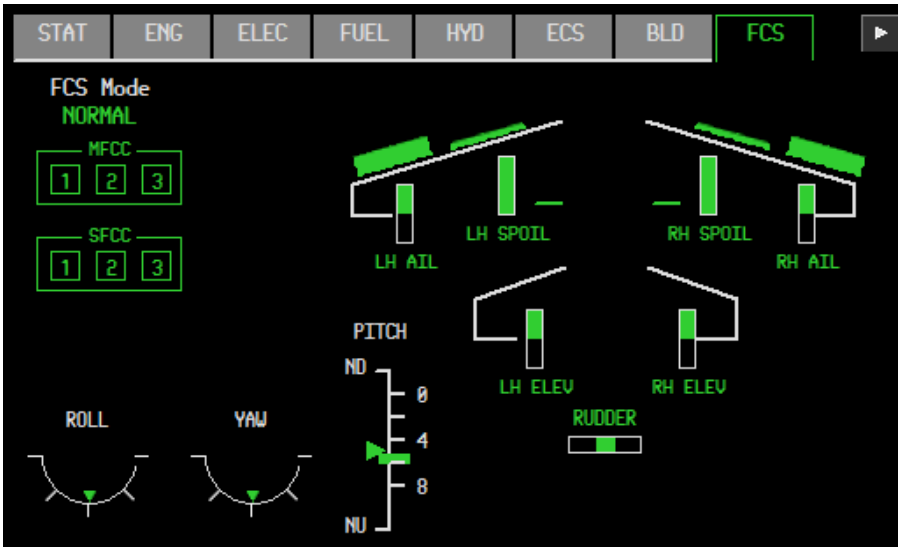


Figure 10 FCS Synoptic Page

The right part of the synoptic gives the positions of all control surfaces except the flaps (removed for clarity).

The positions of all slats are displayed with pictograms:

- when retracted,
- when extended,
- when moving.

ENG-CAS Window

ENG-CAS window comprises:

- A dedicated CAS area,
- Primary engine parameters.

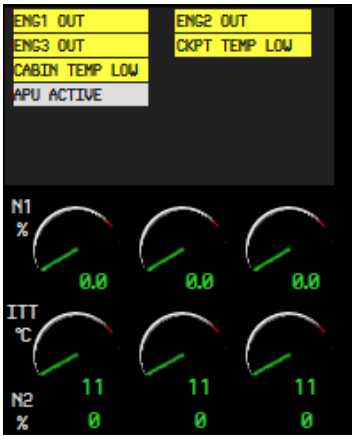


Figure 11 ENG-CAS WINDOW

1/6 Customizable Window

The 1/6 windows can be customized using the 1/6 Window menu.

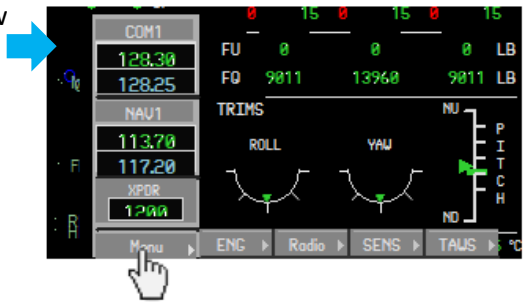


Figure 12 1/6 WINDOW MENU

The 1/6 customizable window can display four types of window:

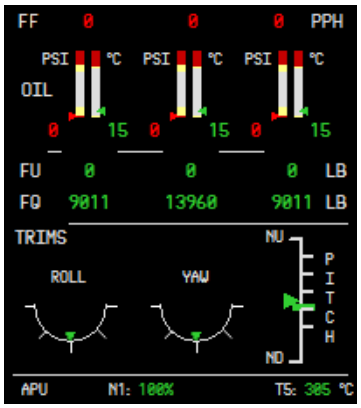


Figure 13 ENG/TRIM WINDOW

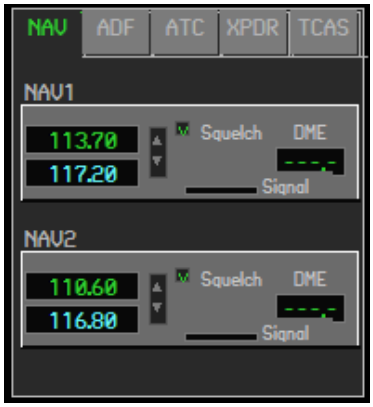


Figure 14 RADIOS WINDOW

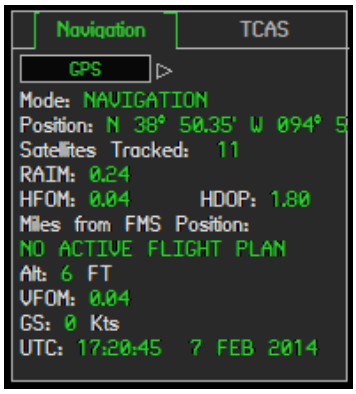


Figure 15 SENSORS WINDOW

Figure 16 TRAFFIC WINDOW

MDU - MultiFunction Display Unit

General

The MDU offers more freedom in the display configuration, as no window is permanent in normal situations.

The available pages are the following:

- An I-NAV (Interactive NAVigation) page,
- A WPT LIST (WayPoinT list) page,
- A FLIGHT MGMT (FLIGHT ManaGeMenT) page,
- An AVIONICS page,
- A SYNOPTICS page, containing the synoptics of all the airplane systems

MDU 1

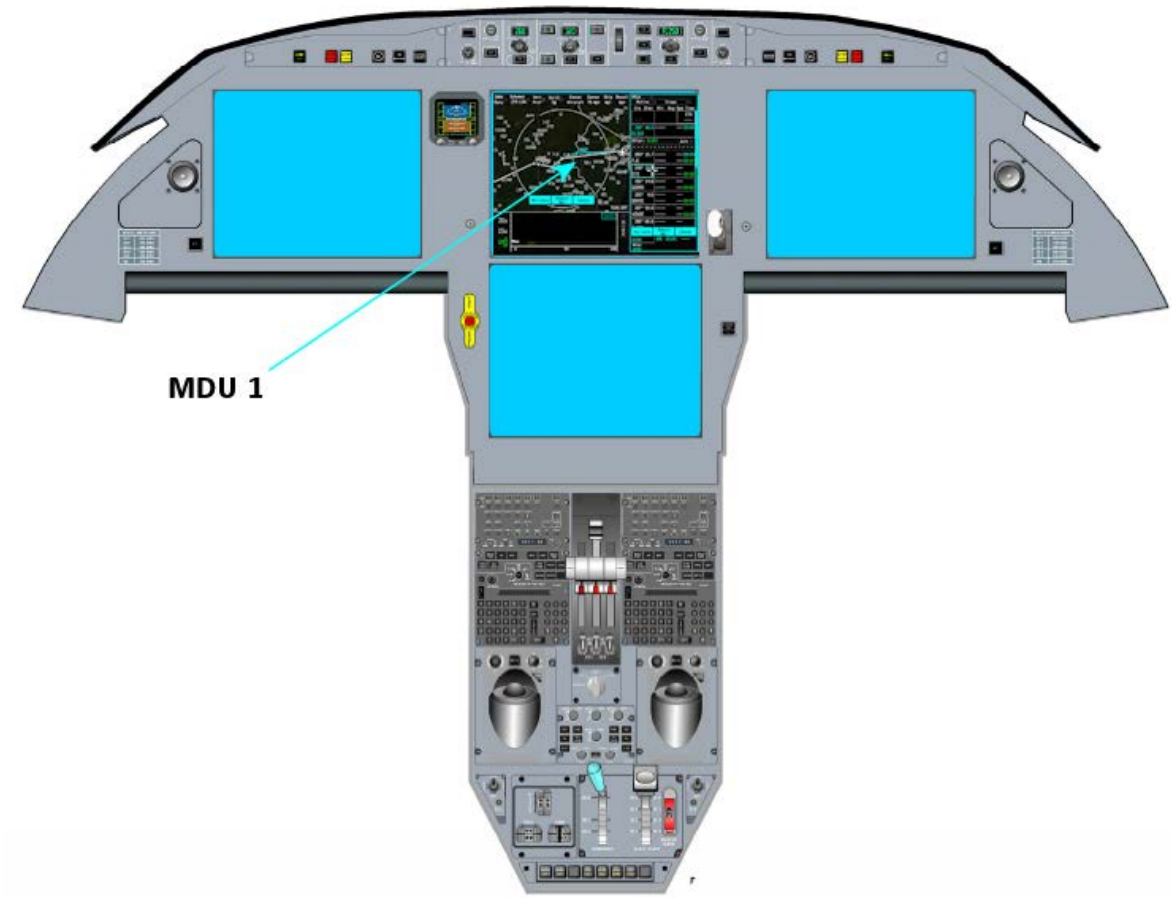


Figure 17 MDU 1 IN FLIGHT DECK

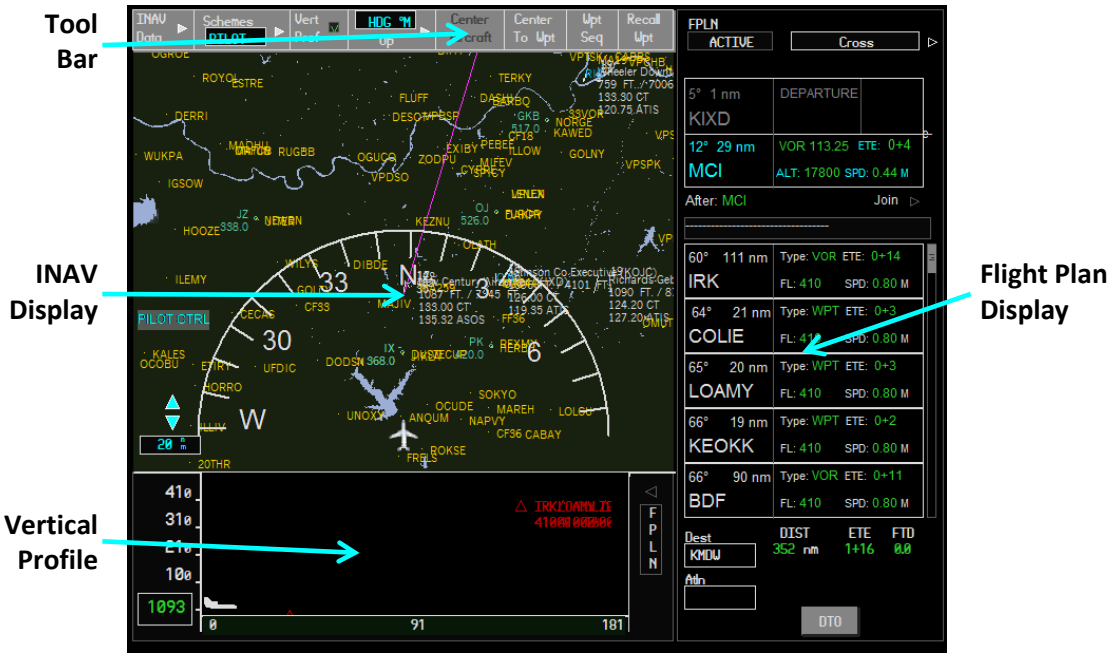


Figure 18 MDU1 WINDOWS

INAV DISPLAY

Display choices for the map are made through the INAV Data Menu.

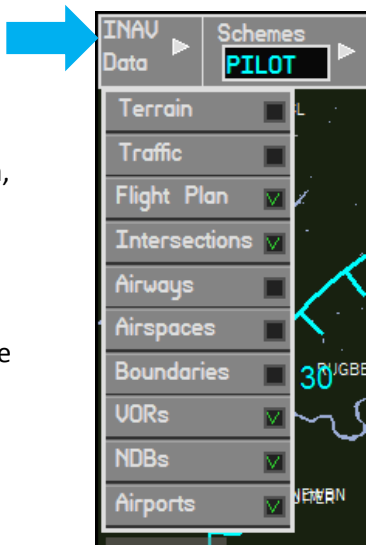


Figure 19 INAV DATA MENU

The I-NAV map display provides a horizontal display of the terrain by merging, at pilot request, information which is gathered by on-board sensors, and from airplane worldwide data bases for aeronautical data, terrain and main geopolitical elements.

This moving map provides a full interactivity to the crew:

- For direct flight plan modification on the map (using the mouse and the cursor),
- For displaying Vertical Situation Display,
- For faster and more intuitive access to data base information.

The crew has a full authority to manage the size (up a full screen size), orientation, content and location of the I-NAV maps in the flight deck.

VERTICAL SITUATION DISPLAY

The Vert Prof selection (Vertical Situation Display, VSD) is available and visible only when the INAV window size is greater than 1/3rd, but for both Secondary and Active flight plans.

The Vert Prof is defaulted to selected at power-up. When selected, VSD is always displayed at the bottom of the INAV window.

The reference setting for all VSD barometric altitudes is the Pilot Flying barometric setting.

Selection

The VSD is selected/deselected by the pilot on the INAV tool bar using the Vert Prof button.

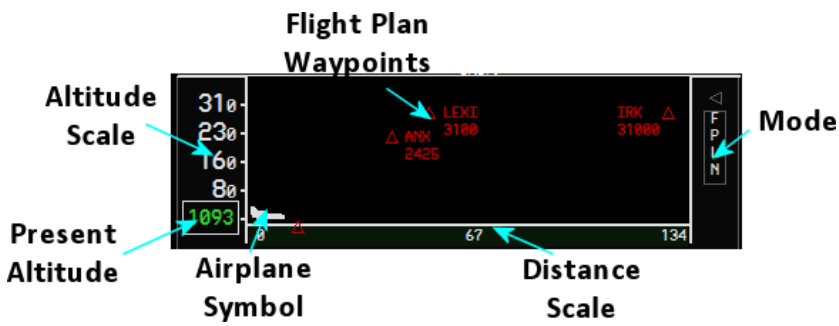


Figure 20 VERTICAL SITUATION DISPLAY

Objects Displayed

AIRPLANE SYMBOL

The airplane symbol is allowed to move its position vertically and horizontally on the VSD.
The airplane symbol vertical position in the VSD window is computed according to the airplane barometric altitude. A framed label with green text on a black background showing the A/C barometric altitude in feet is displayed at the A/C symbol height on the Y-axis scale.

The airplane symbol horizontal position in the VSD window is computed according to INAV modes. The airplane symbol is horizontal, constant in size and always oriented to the right. The default color of the airplane symbol is white.

DISTANCE SCALE

The distance of the profile in nautical miles, from the present aircraft position.

FLIGHT PLAN WAYPOINTS

Flight plan items (Waypoints, Legs) are displayed in at their relative flight plan altitudes.

MODE

FPLN and Track (TRK) modes are available. Track mode adds a reference line indicating flight plan cruising altitude.

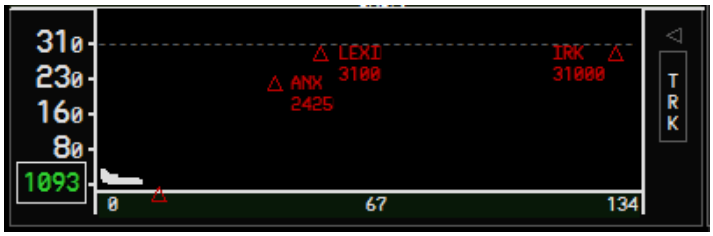


Figure 21 VSD TRACK MODE

FLIGHT PLAN DISPLAY

The Flight Plan Display Window is on the right 1/3 of the MDU 1 screen.

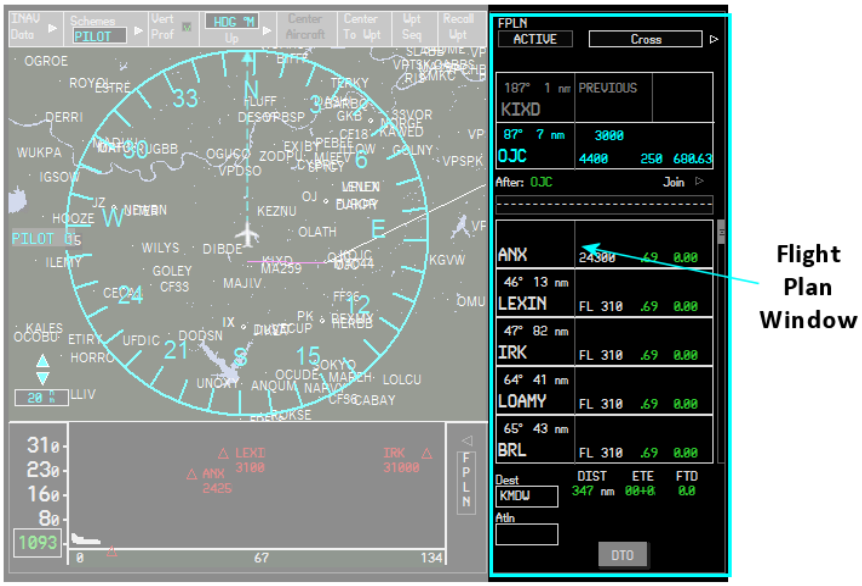


Figure 22 FLIGHT PLAN DISPLAY WINDOW

Mode and Status Display

The mode and status displays are at the top of the Flight Plan Window.

Figure 23 FLT PLN WINDOW MODE AND STATUS

STATUS DISPLAY

Will show ACTIVE when a flight plan is loaded.

MODE DISPLAY SELECTOR

Selects the mode format of the flight planning window. There are six data and display modes.

1. Cross – (Crossing Constraint)
2. Departure
3. Arrival
4. Show Information
5. Amend
6. Search

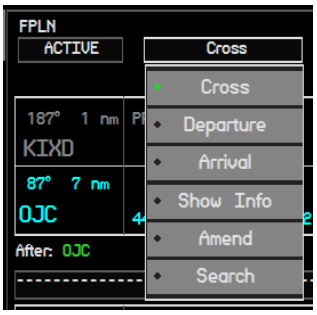


Figure 24 FLT PLAN WINDOW MODE SELECTOR

In all display modes, the flight plan section shows the flight plan data for distance, ETE and fuel to destination. The Flight Plan Data Display is on the bottom of the Flight Plan Display.

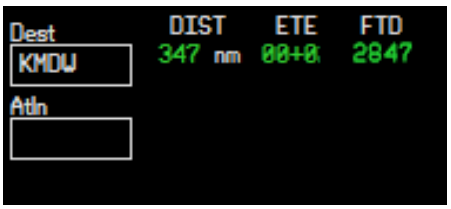


Figure 25 FLT PLN DATA DISPLAY

Cross Constraint Mode

Displays a crossing constraint on each waypoint: altitude (A/B), speed (IAS, Mach), estimated time enroute (ETE) and waypoint type. The display shows the next waypoint at top, colored in cyan. A scrollable display underneath shows the next following 5 waypoints.

This window mode supplements INAV by equivalent text-based flight planning operations and concise view of the active and pending flight plan. All the INAV graphical flight planning modifications can also be done on Waypoint list using the same object-task method and the same dialog box.

The flight plan can be changed to Direct-To/Divert-To any waypoint on the list by mouse clicking on the waypoint and pressing the DTO button.

Figure 26 FLT PLN CROSS MODE

Waypoint Data

Information on each waypoint in the flight plan is available in the scrollable *Waypoint Data Display*.

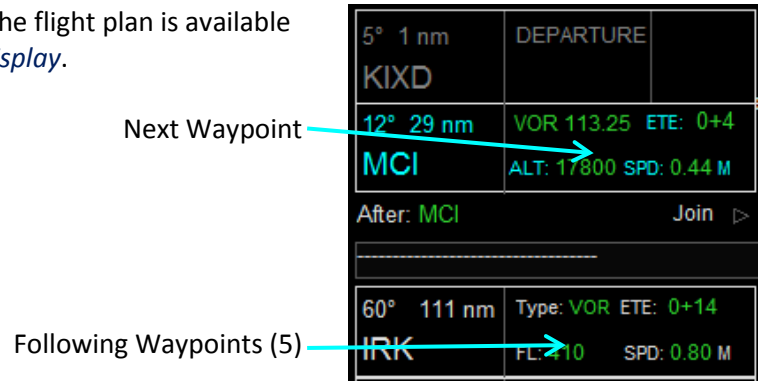
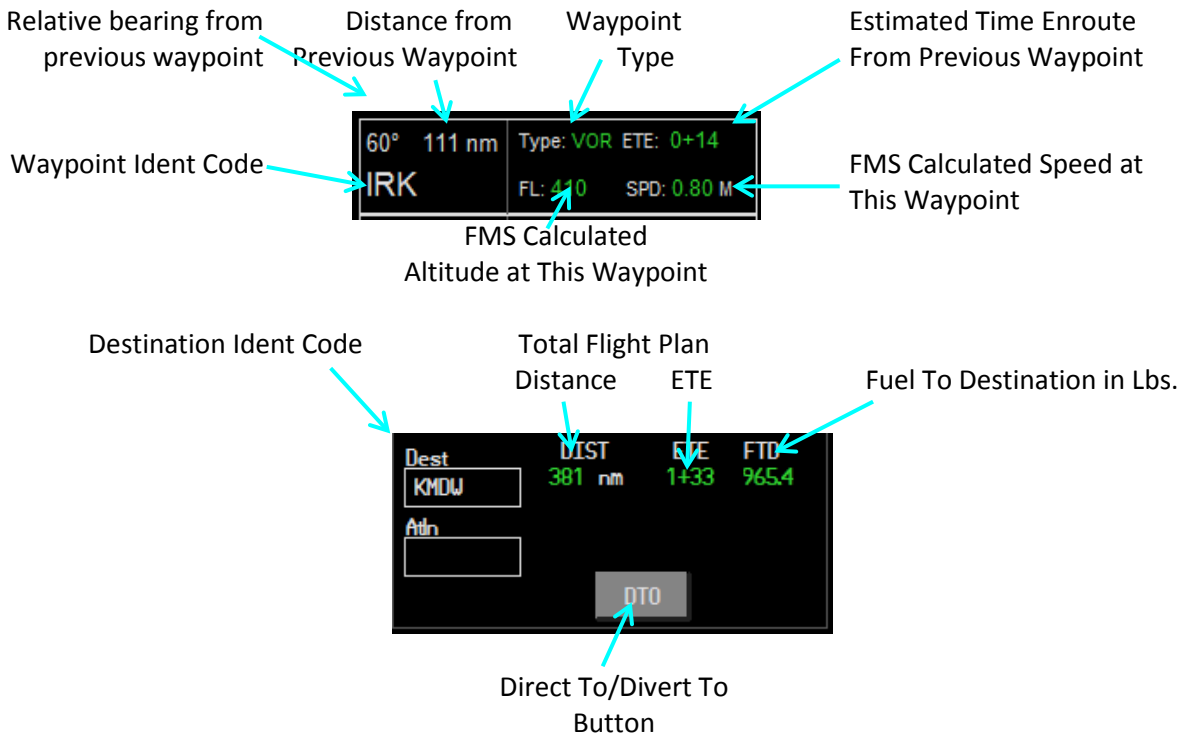


Figure 27 – WAYPOINT DATA WINDOW



Departure Mode

Displays all Standard Instrument Departure (SID) waypoints, along with the following waypoint data.

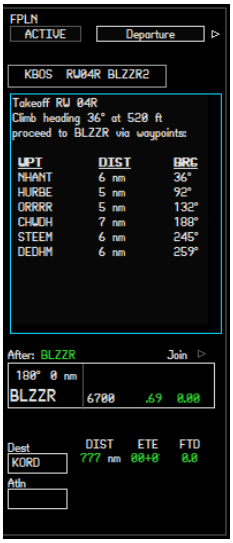
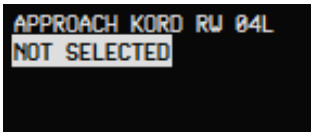


Figure 28 FLT PLN DEPARTURE MODE

Approach Mode

Shows all Standard Terminal Approach (STAR), and final approach waypoints when selected.

The status of the final approach waypoints is also displayed.



See Selecting Final Approach on Page 44 for more details on selecting final approach transition waypoints.

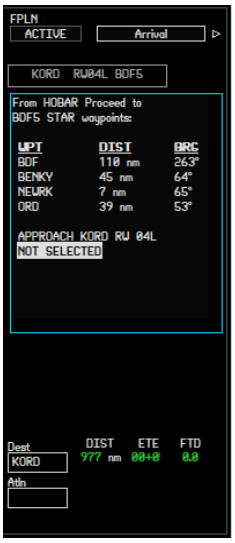


Figure 29 FLT PLAN APPROACH MODE

Amend Mode

The Amend Mode allows you to add or delete waypoints in a loaded flight plan.

The flight plan waypoint list is displayed at the top, with a scroll bar to the right. Use the scroll bar to move up and down the list. The present selection is highlighted in green.

Use the ADD or DEL buttons to make changes to the flight plan.

See the handbook Falcon *Avionics Quick Start.pdf*, pages 14 – 17 on more details on adding or deleting waypoints. The handbook can be found in the same folder as this document.

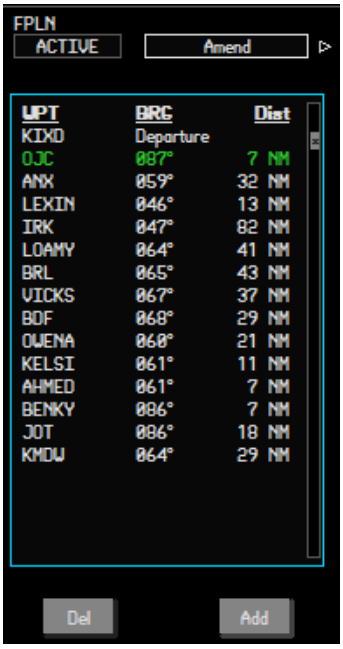


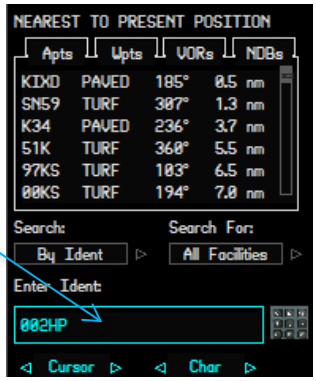
Figure 30 AMEND WAYPOINT MODE

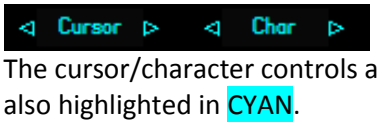
Search Mode

The Search Mode Page is a powerful interface that allows you to search for facilities (waypoints, airports, navigation beacons). You can search the entire database in *Search Facilities Mode*, or by the nearest facilities in *NRST Mode*.

See the handbook *Falcon Avionics Quick Start.pdf* for information on using the search functions to add waypoints or Direct To/Divert To flight plans.

In Search Facilities Mode, the *Search Ident Cursor Box* is highlighted in CYAN. The NRST Facility Box is not.





The cursor/character controls are also highlighted in CYAN.

If you want to search by all facilities, just mouse click within the Cursor Box, or on any of the cursor/character controls. The mode will change to *Search Facilities Mode*.

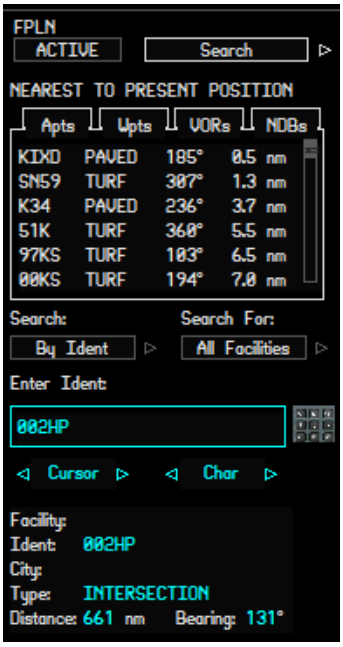


Figure 31 FLT PLN SEARCH MODE

To change to *NRST Mode*, just click anywhere within the *Nearest To Present Position* box.

Mouse click the tabs for the four facility types:

1. Apts – Airports
2. Wpts – Waypoints/Intersections
3. Vors – VOR beacons
4. Ndbs – NDB Beacons

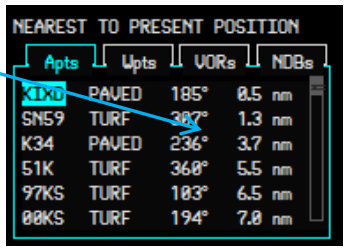


Figure 32 NRST SEARCH MENUS

In the case of NDB and VOR facilities, their respective frequency will be highlighted on the menu. The prompt for the ENT button at the bottom of the Flight Plan Display menu will blink. If pressed the frequency will be set as the active frequency on the respective radio.

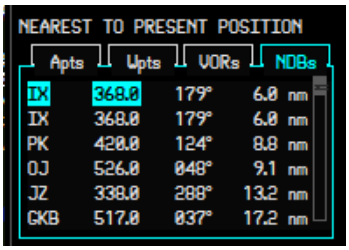


Figure 33 ENTER HIGHLIGHTED FREQUENCY

In Search Facilities Mode, you can elect to search by facility name, or by IDENT code.

The search can also be filtered by facility type as well.

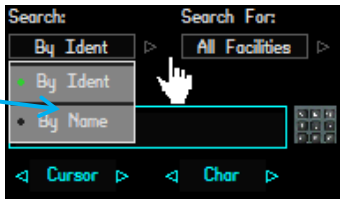


Figure 34 FACILITY SEARCH PARAMETER MENU

Filter by:

1. All facilities
2. Airports
3. Waypoints/Intersections
4. NDB beacons
5. VOR Beacons

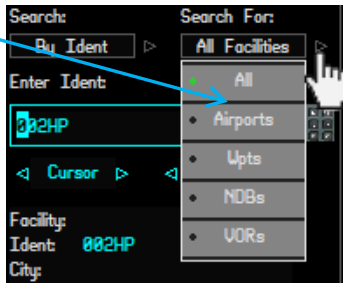
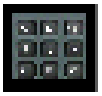


Figure 35 FACILITY SEARCH FILTER

The cursor control will move the highlighted cursor left and right. The Char (Character) control will scroll through the alphanumeric characters 0 – 9 and then A – Z.

The *Keyboard Icon* next to the facility search cursor box, when pressed, will open the MultiFunction Keyboard in a separate popup window.



Search name or IDENT alphanumeric values can be entered directly using the MKB by simply pressing the letters or numbers in sequence.

Figure 36 MULTIFUNCTION KEYBOARD

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MDU 2

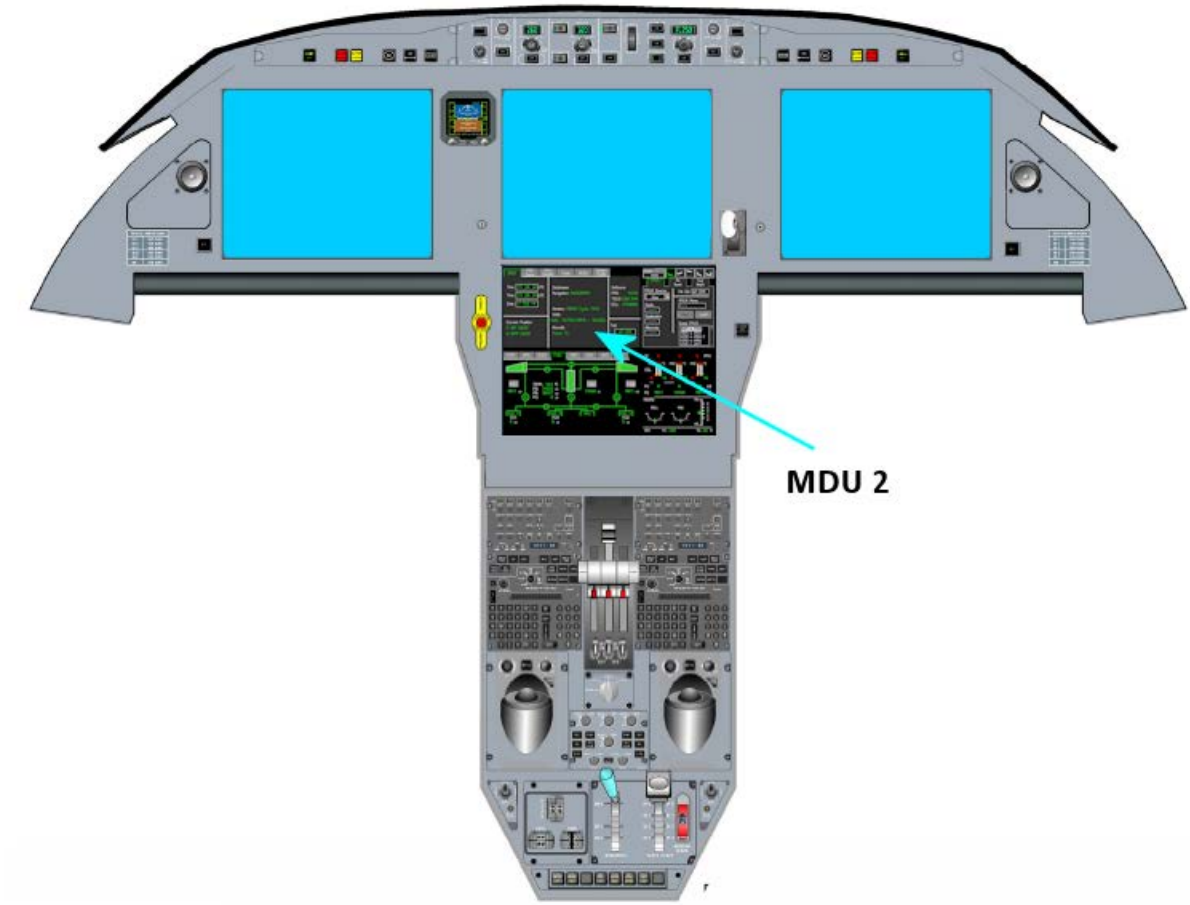


Figure 37 MDU 2 IN FLIGHT DECK

MDU 2 consists of 4 separate windows:

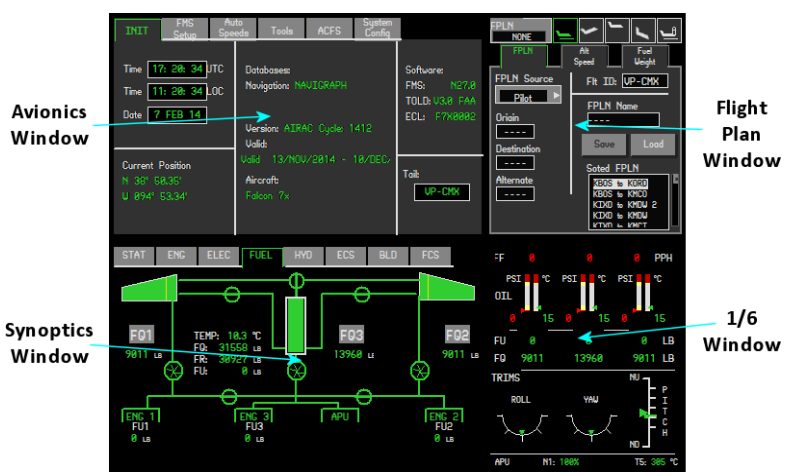


Figure 38 MDU 2 DISPLAY WINDOWS

AVIONICS WINDOW

The Avionics Window consists of six pages of data and settings for:

1. Avionics Initialization
2. FMS Setup
3. Auto Speeds (Autothrottle)
4. Tools
5. Automatic Flight Control System (ACFS)
6. System Confirguration

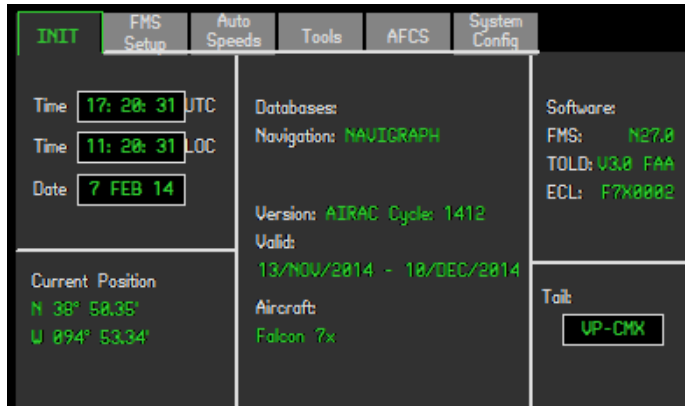


Figure 39 MDU 2 AVIONICS WINDOW

Initialization

See Figure 39 above. The INIT tab provides data relevant to the airplane, FMS software, and database configuration and validity.

The INIT tab also provides the "Current Position" of the master FMS. This position is initialized when the system is powered up..

FMS Setup

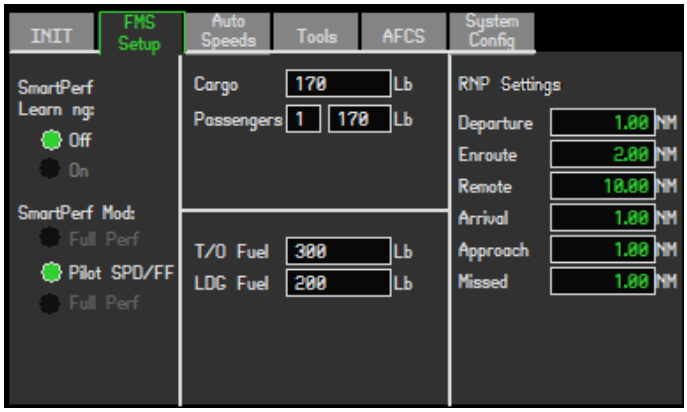


Figure 40 AVIONICS WINDOW FMS SETUP PAGE

The FMS Setup tab allows selection of:

- The type of data and algorithm that will be used by the FMS for performance calculation,
- The type of media used for flight summary data output,
- The estimated Fuel quantity allowances on the ground and to be used by the FMS,
- The RNP (Required Navigation Performance) Settings

SmartPerf Learning shall be set to OFF and *SmartPerf Mode* defaults to **Full Perf**. These are the normal flight selections.

RNP Settings are already filled in, based on certification values. Usually, nothing needs to be changed here. Leave the default settings.

Auto Speeds

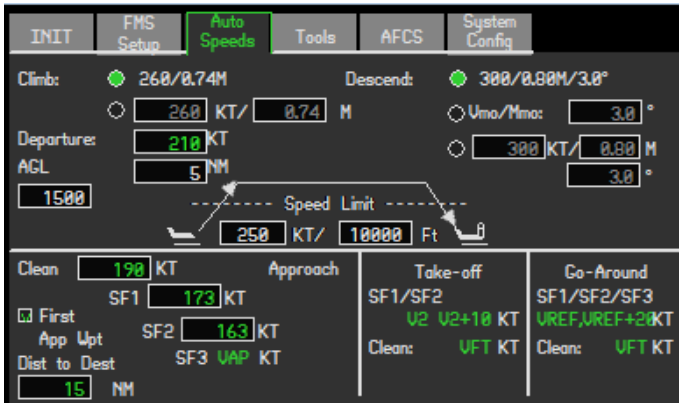


Figure 41 AVIONICS WINDOW AUTO SPEEDS PAGE

This page controls how the Autothrottle will operate while under control of the FMS. This does not apply to manual control of the Autothrottle function on the Guidance Panel.

A detailed description and instructions on use can be found in the AUTOTHROTTLE (AT) CONTROL section of the handbook *Falcon Avionics Quick Start.pdf*, which is located in the same folder as this document.

Tools

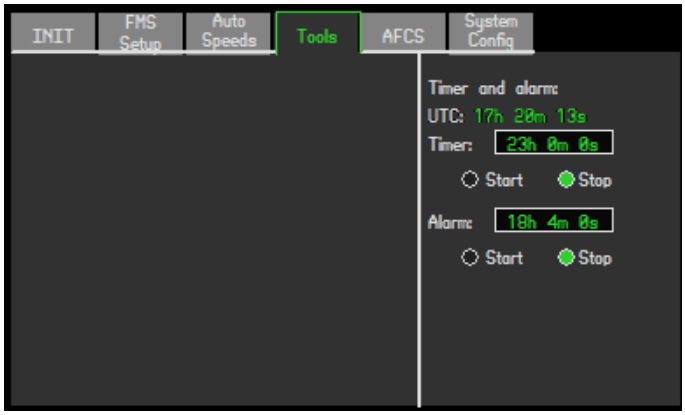
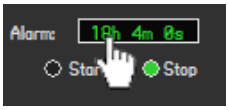


Figure 42 AVIONICS WINDOW TOOLS PAGE

The Tools tab provides three time functions:

- **Timer and Alarm** displays current UTC in green (non-modifiable). Time is derived from airplane time.
- **Timer** is used to set a time lapse which counts down to zero. The format is XXh YYm ZZs. The default state is inactive with white dashes displayed. When the timer reaches zero, an aural tone sounds and a UTC label flashes in the HSI until the timer is stopped. Selecting the Start radio button starts the timer. Selecting stop suspends it.
- **Alarm** is used to set a reminder alarm to sound at an upcoming UTC. The format of this field is XX:YY. The default state is inactive with white dashes displayed. When current UTC time equals entered alarm time, an aural tone sounds and a UTC label flashes in the HSI until the alarm is turned off. Selecting the On radio button turns the alarm on. Selecting Off deactivates it.



Time settings are by mouse control.

The aural timer and alarm tones may be silenced by pressing the

pushbutton.

AFCS Tab

Figure 43 AVIONICS WINDOW AFCS TAB

The FMS and Automatic Flight Control System page displays the Command Side and yaw damper settings.

Open the AFCS tab on MDU 2 to access this option. When checked the **Yaw Damper** will be active. Select **LNAV Yaw Damper** if you also want the Yaw Damper active in LNAV mode.

System Configuration Tab

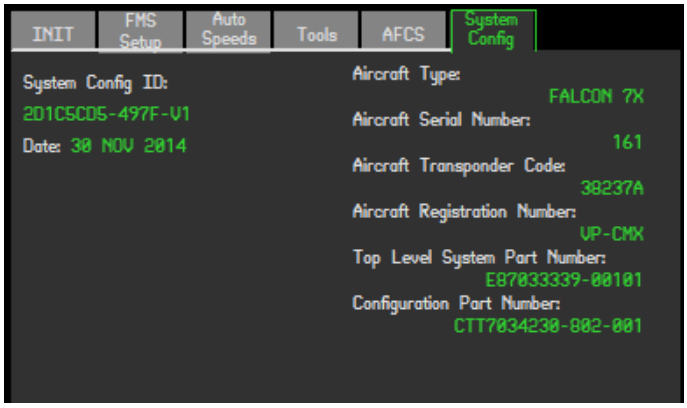


Figure 44 AVIONICS WINDOW SYSTEM CONFIGURATION TAB

The **System Config** tab displays configuration information for all installed software/databases and is used for return to service type operations.

FLIGHT PLAN PAGES

The *Flight Plan Pages* consist of page tabs, representing five phases of flight, selected by mouse.

Figure 45 MDU 2 FLIGHT PLAN PAGE SELECTION

1. Ground/Flight Plan Selection
2. Departure
3. Cruise
4. Descent/Approach
5. After Landing

Flight Plan Selection

Saved flight plans can be loaded using the Load button.

The saved flight plans are listed in the display box, listed by departure IDENT and destination IDENT. Scroll down the list by mouse control on the right hand scrollbar.

See the Loading a Flight Plan section of the handbook *Falcon Avionics Quick Start.pdf* for more details on loading flight plans.

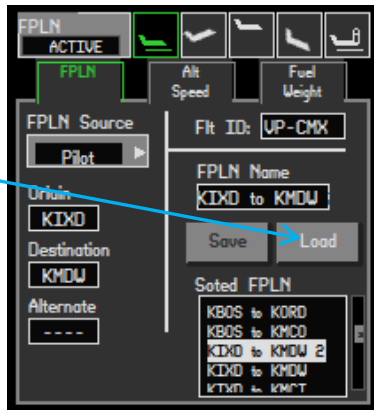


Figure 46 MDU 2 FLIGHT PLAN SELECTION TAB

Departure

The *Departure Page* Consists of three tabs:

1. SID
2. Takeoff Config
3. Takeoff Data

Standard Instrument Departures (SID) can be loaded from the *SID Tab* by pressing the *Runway/Sid Button*. See *Loading A Standard Instrument Departure* in the handbook *Falcon Avionics Quick Start.pdf* for more details on loading SIDs. The sections *Takeoff Configuration* and *Takeoff Data* describe these menu tabs in detail.

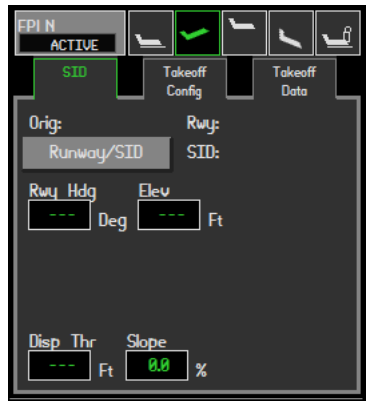


Figure 47 FLIGHT PLAN DEPARTURE PAGE

Cruise

Spd (airspeed), **Crz** (cruise altitude), and **Step** (step climb) are based on inputs from preflight unless updated by the crew. Updates are input using the tab. **Ceil** (Ceiling) and (Optimum altitude) are based on a blend of available information.

The FMS uses manual input predictions, current condition measurements to obtain these figures.

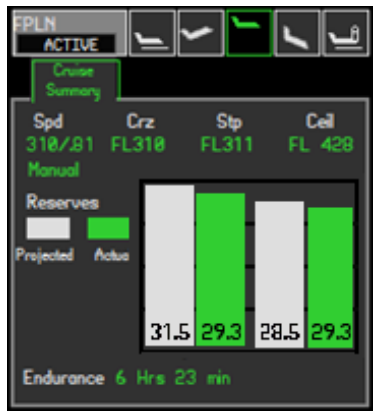


Figure 48 FLT PLN CRUISE TAB

Fuel summary information is displayed digitally and with synthetic bar-graphics to display projected fuel remaining at destination and alternate based on a blend of current mission parameters (speed, cruise altitude, step climbs, atmospheric conditions), current airplane weight and predicted mission conditions (for remainder of flight).

There are two pairs of fuel bar-graphs: the left pair represents destination fuel, the right pair represents alternate fuel. The green bars represent current fuel estimates during flight (labeled “Actual”).

Approach

The *Approach Page* provides an interface for selection of arrival and approach, Landing Configuration, and Landing Data. These are presented in 3 Tabs:

1. Star Route
2. Runway App
3. Landing Config

Figure 49 FLT PLN APPROACH PAGE

SELECTING STAR APPROACH

More detailed information and procedures are available in the *Loading a Standard Arrival Route (STAR)* section of the handbook *Falcon Avionics Quick Start.pdf*.

SELECTING FINAL APPROACH

More detailed information and procedures are available in the *Loading a Runway Approach* section of the handbook *Falcon Avionics Quick Start.pdf*.

LANDING CONFIGURATION

More detailed information and procedures are available in the *Loading a Runway Approach* section of the handbook *Falcon Avionics Quick Start.pdf*.

Post-Flight

The Post-flight POF provides a flight summary. All associated data for display is provided by the FMS and is based on the values recorded and computed for the Active flight plan.

If a particular data item is not available for display, then its associated display will show
.

Table 1 FLT PLAN POST-FLIGHT PAGE

Avg TAS - displays average airspeed based on flight time and air distance.
Air Dist - displays total Air Distance for the flight. During flight.
Avg GS - displays Average Ground Speed.
Gnd Dist - displays total Ground Distance for the flight.
Taxi Time - displays time recorded from original parking brake release after system powerup.
T/O Time - displays Take-Off time (Zulu).
Ldg Time - displays Landing Time (Zulu).
Apron Time - displays time recorded when the parking brake was set after flight.
Flight Time - is elapsed time in-flight measured once is aircraft is airborne.
Block Time – is overall duration between *Taxi Time* and *Apron Time*.

SYNOPTIC PAGES

The SYNOPTICS window provides a clear and concise illustrated view of the status for each airplane system synoptic. The system is represented graphically with most elements that can be controlled by the crew, and uses a consistent color code to provide an instantaneous awareness of the system status.

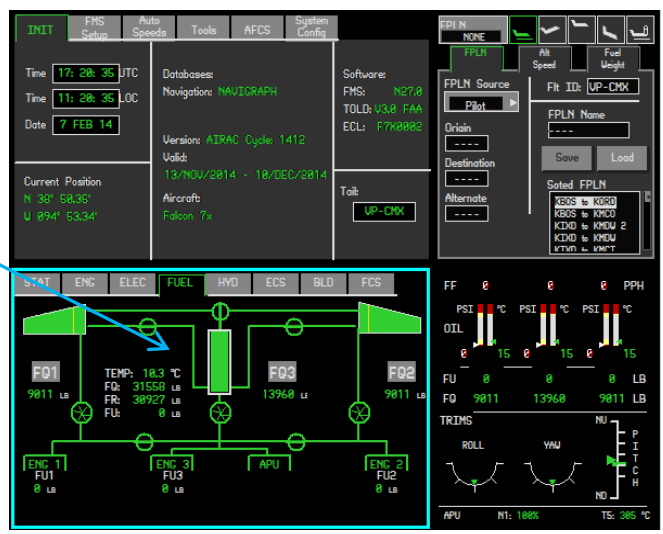


Figure 50 SYNOPTIC PAGES

There are six Synoptic Pages:

1. **STAT** - Status of the airplane
2. **FMS Setup** – Data and algorithms used by the Flight Management System
3. **Auto Speeds** – Autothrottle settings and controls
4. **Tools** – Alarm and timer functions
5. **AFCS** – Automatic Flight Control settings
6. **System Config** – Configuration information on system software

General

Indication of an active system or an inactive or dormant system is indicated by a green display (active) or a white display (inactive).

Faults or failures are indicated by a **RED X**. Overvalue or parameter exceedances are displayed in **RED**.

STAT Page

The **STAT** page of the system window represents the status of the airplane, by displaying current limitations associated with the failures displayed in the CAS.

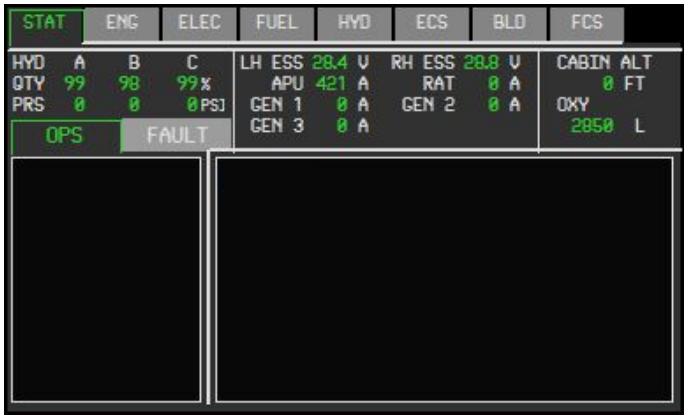


Figure 51 STAT SYNOPTICS PAGE

The STAT tab is designed to provide the complete and concise status of the airplane systems in a single format.

ENG Page

Engine N1, N2, Oil Pressure and Oil Temperature are displayed. Engine Deice status is also displayed. APU Engine parameters are also displayed at the top right hand corner of the ENG Synoptic.

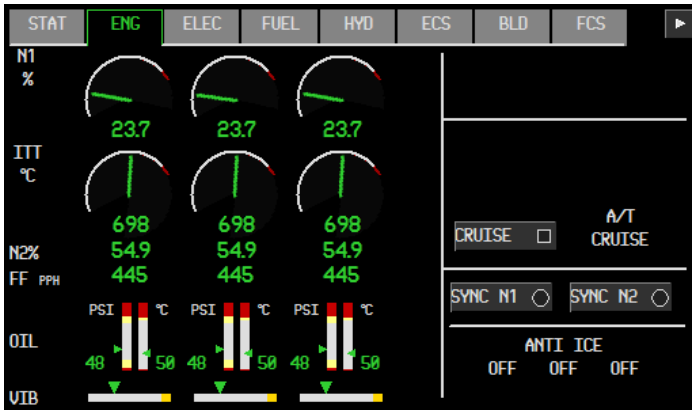


Figure 52 ENG SYNOPTICS Page

The N1 or N2 synchronization will run all engines at the same N1 or N2 actual speed, thus eliminating uncomfortable low frequency tones.

Clicking one of the two soft keys SYN N1 or SYN N2 selects either the N1 or N2 synchronization mode. Engine 2 is the master.

The N1 synchronization should be used in cruise for maximum efficiency with or without A/T and the N2 synchronization should be used in descent with low power setting.

Cruise mode is sets the Autothrottle upper thrust limit to MAX CRUISE rather than MAX CLIMB.
In this sub-mode, the engine power is set to a given thrust up to the MAX CRUISE setting provided by the FADEC, and the Flight Path Angle is modified to reach the target SPEED.

ELEC Page

The ELEC synoptic page displays APU, generator, battery and Ram Air Turbine (RAM) status and ammeter measurement. For more complete details of the electrical systems we recommend you review the handbook *Electrical Systems.pdf*.

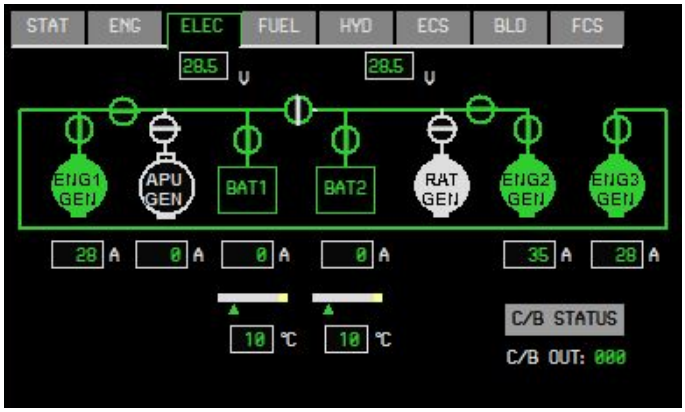


Figure 53 ELECTRICAL SYNOPTICS PAGE

FUEL Page

The Fuel Synoptics Page provides a summary of fuel quantity, status, and booster pump status in one easy to interpret graphic display. See the *Fuel System* section in the handbook *Systems Quick Start.pdf* for more details on the fuel system and this synoptics page.

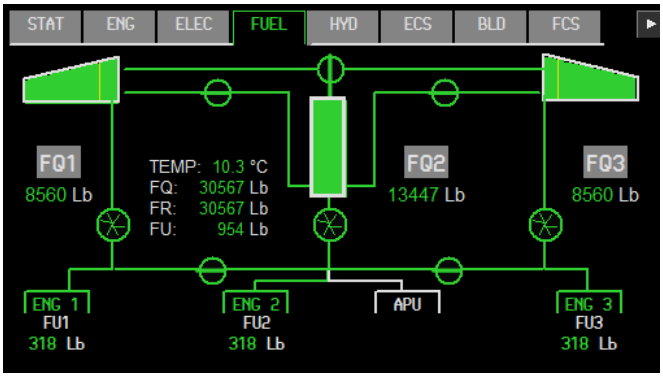


Figure 54 FUEL SYNOPTICS PAGE

HYD Page

The Hydraulic (HYD) synoptic page displays the three hydraulic systems and the distribution of users between the systems, in an easy to interpret graphic display. See the *Hydraulic System* section in the handbook *Systems Quick Start.pdf* for more details on the fuel system and this synoptics page.

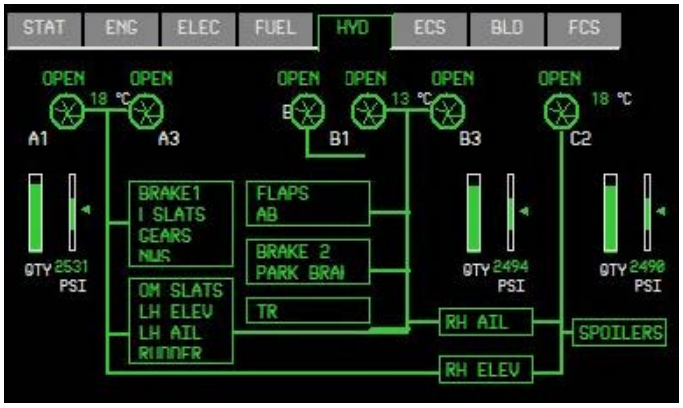


Figure 55 HYD SYNOPTICS PAGE

ECS Page

The Environmental Control System (ECS) page is a graphical representation of the entire ECS system:

- Pressurization
- Oxygen
- Heat/Air Conditioning

For more information on the ECS system see the handbook *ECS and Pressurization.pdf* for more information on the ECS and indications.

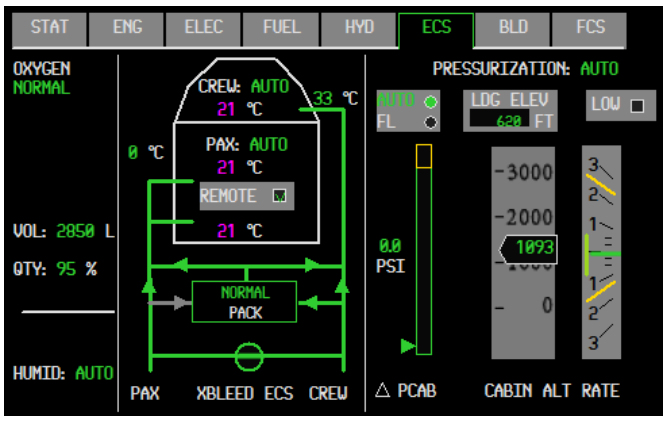


Figure 56 ECS SYNOPTICS PAGE

BLD Page

The *Bleed Air Page* (BLD) is a graphical representation of the *Bleed Air System*. See the *Bleed Air System* section in the handbook *Systems Quick Start.pdf* for more details on the Bleed system and this synoptics page.

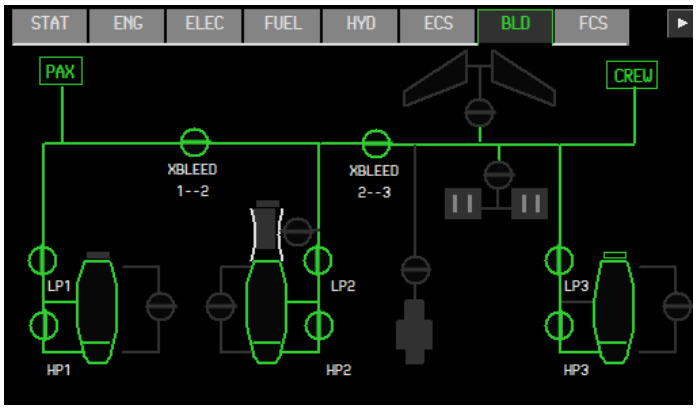


Figure 57 BLD SYNOPTICS PAGE

FCS Page

The FCS synoptic page displays the following information:

- The active FCS mode,
- MFCC and SFCC computer status,
- Trim positions,
- Positions of all control surfaces.

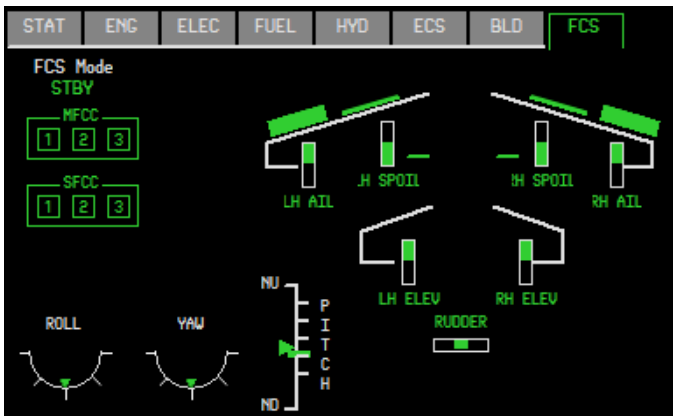
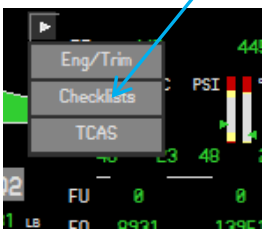


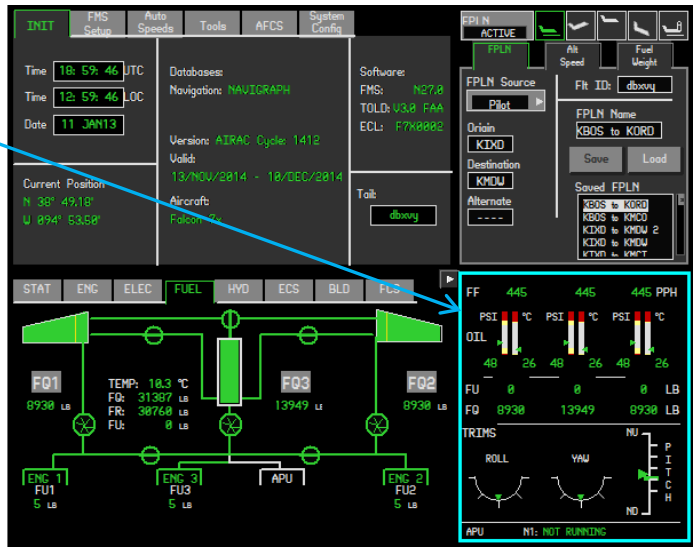
Figure 58 FCS SYNOPTIC PAGE

1/6 WINDOW

The *1/6 Window* can display different FMS components.

These components can be selected via the drop-down menu in the upper left hand corner of the display area.





Window Modes

There are three *Window Modes*:

- Eng/Trim – Engine instruments and trim display
- Checklists – Electronic Checklist display
- TCAS – Traffic display

ENG/TRIM

Identical to PDU Eng/Trim display. See Figure 13.

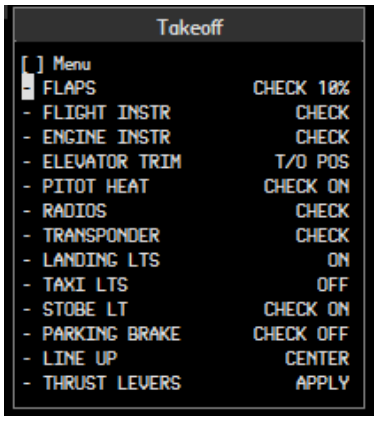
TCAS

Identical to PDU Traffic Display. See Figure 16.

CHECKLISTS

There are 11 checklists available, listed on the *Checklist Menu*.

Each checklist can be scrolled by mouse on the left hand side.
A return link to the main menu is at the top of each list.



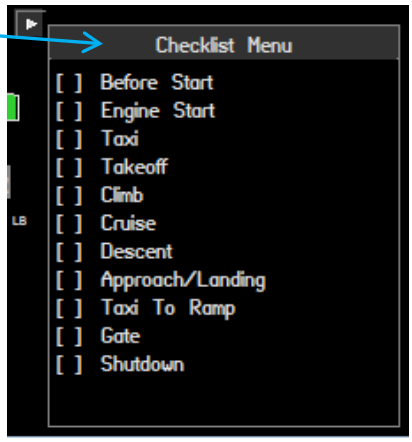


Figure 59 ELECTRONIC CHECLIST MENU

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